BCG boost against *Mycobacterium tuberculosis*

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Background: BCG as an only effective vaccine to TB played variable efficacy. New vaccination strategies are required. We used interleukin 12 with the combined DNA prime- BCG boost strategies to observe whether the immunogenicity of vaccines against M.Tuberculosis would be improved.

Methods: Plasmid pcDNA- Ag85A and pc-Esat-6 were constructed for vaccination. The mice were divided into 4 immunity groups: BCG group(1), DNA/BCG group(2), DNA + IL- 12/BCG group(3) and DNA/BCG + IL-12 group(4). All mice received three immunizations at 2- week interval For prime-boost experiments, animals were twice vaccinated intramuscular injection with combined DNA (Ag85A and ESAT-6) or mixed DNA-IL-12 and combined DNA, then boosted with BCG or mixed with DNA-IL-12 and BCG. ELISA was used to determine IgG antibody specificity and the proliferative responses of lymphocytes and the phenotype was detected by flow cytometry. Production of INF-γ was detected at 4-week, 6-week, and 8-week after boost.

Results: The antibody titer of group 1, group 2, group 3 and group4 showed a positive reaction. Group3 and 4 compared with group2 and 1, induced high antibody titer. The antibody titer of all four groups increased gradually, and achieved a higher level at 8 week after booster. Group 1, group 2, group 3and group4 all showed significant difference of proliferative responses ($P < 0.05$). Group 3and group 4 were much higher that group 2 and group1 ($P < 0.05$).

The group 3 and the group 4 induced stronger antigen-specific IFN-γ. The mean IFN-γ responses of group 3and the group 4 were not only significantly higher than group PBS ($P < 0.01$) but also higher than group 2and group 1 ($P < 0.05$). The mean percentage of CD4 + and CD8+ T cells vaccinated with DNA/BCG+IL-12, DNA+IL-12/BCG, DNA/BCG, or BCG were significantly higher compared to group PBS($P < 0.05$). A higher mean percentage of CD4+ and CD8+ T cells were observed in mice vaccinated with DNA + IL-12/BCG or DNA/BCG + IL-12 when compared to the DNA/BCG or BCG groups.

Conclusion: Our results showed that the strategy of using human interleukin 12(IL-12) associate DNA priming followed by BCG boosting is an effective way to increase the immunogenicity of tuberculosis, not only increasing cell immunity but also maintaining a stable humoral immunity.

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The role of inactivated polio vaccine (IPV) in achieving polio eradication in India

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Background: Since ancient times polio has lamed millions of young children before they had learned to walk. The tive to eradicate the disease has been successful in reducing the incidence by 99% and it has prevented more than 5 million cases of polio in past 21 years. The disease has been eradicated throughout the western hemisphere and in most developing nations by use of the Sabin Oral Polio Vaccine. At the present crucial end stage of polio eradication, the wild virus is circulating in Afghanistan, India, Nigeria and Pakistan. The studies in developing countries have demonstrated that even after more than 3 doses of OPV, the immune response generated in children is not satisfactory and not all the children seroconvert. Studies have concluded that that OPV/IPV sequential schedule generate far superior humoral and intestinal immune response. It is therefore essential for the policy makers to consider the role that could be played by the sequential IPV/OPV schedule in achieving the goal of polio eradication for this important international public health challenge.

Methods: To achieve the objectives, we used peer reviewed journal articles published since 01-01-1985 till 31-07-2009. The articles were searched via Pub Med and EMBASE electronic data base system using key words/phrases. The criteria used for limiting the search while using PubMed and Embase have been described in Table: 1. The references of the selected articles were also searched for additional literature. The seroconversion rates among the study population after OPV only, IPV only and sequential OPV/IPV schedule were compared with each other.

Table: 1 Limiting criteria used for literature search on PubMed and Embase

Limiting Criteria	PubMed	EMBASE
Full Text	√	
Date	01/01/1985 to 31/07/2009	01/01/1985 to 31/07/2009
Language	English	English
Type of Studies Included		
Randomized Controlled Trials	√	√
Analysis	√	√
Practice Guidelines	√	X
Reviews	√	√
Controlled Clinical Trial	√	√
Age		
New-Born	√	√
Infant	√	√
Pre-School Child 2-5 Years	√	X
1-6 Year	X	√

Criterias for Literature Search

Results: In the various setting in the developing countries it was observed that the seroconversion rates among those children receiving IPV/OPV sequential schedule was higher than OPV only schedule.

Conclusion: The rationales for use of sequential IPV/OPV schedule in current setting are (1) It will fill the existing immunity gap rapidly (2) It will reduce the excretion of vaccine virus and thereby the risk of cVDPV (3) The risk of VAPP will be reduced. (4) It will also allow strengthening of the routine immunization services by states.

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